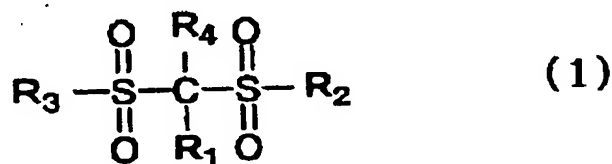


CLAIMS

1. An electrolyte solution for secondary battery comprising at least an aprotic solvent having an electrolyte dissolved therein and a compound represented by the following general formula (1):

[formula 1]



5

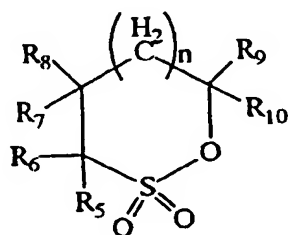
wherein R₁ and R₄ independently represent an atom or a group selected from a hydrogen atom, a substituted or unsubstituted alkyl group having 1 to 5 carbon atoms, a substituted or unsubstituted alkoxy group having 1 to 5 carbon atoms, a substituted or unsubstituted fluoroalkyl group having 1 to 5 carbon atoms, a polyfluoroalkyl group having 1 to 5 carbon atoms, -SO₂X₁, wherein X₁ is a substituted or unsubstituted alkyl group having 1 to 5 carbon atoms, -SY₁, wherein Y₁ is a substituted or unsubstituted alkyl group having 1 to 5 carbon atoms, -COZ, wherein Z is a hydrogen atom or a substituted or unsubstituted alkyl group having 1 to 5 carbon atoms, and a halogen atom; and R₂ and R₃ independently represent an atom or a group selected from a substituted or unsubstituted alkyl group having 1 to 5 carbon atoms, a substituted or unsubstituted alkoxy group having 1 to 5 carbon atoms, a substituted or unsubstituted phenoxy group, a substituted or unsubstituted fluoroalkyl group having 1 to 5 carbon atoms, a polyfluoroalkyl group having 1 to 5 carbon atoms, a substituted or unsubstituted fluoroalkoxy group having 1 to 5 carbon atoms, a polyfluoroalkoxy group having 1 to 5 carbon atoms, a hydroxyl group, a halogen atom, -NX₂X₃, wherein X₂ and X₃ independently represent a hydrogen atom or a

substituted or unsubstituted alkyl group having 1 to 5 carbon atoms, and
 -NY₂CONY₃Y₄, wherein Y₂ to Y₄ independently represent a hydrogen atom or a
 25 substituted or unsubstituted alkyl group having 1 to 5 carbon atoms.

2. The electrolyte solution for secondary battery according to claim 1 ,
 wherein the compound represented by the general formula (1) is contained in
 the electrolyte solution for secondary battery in an amount of 0.1 to 5.0 weight%
 based on the total weight of the electrolyte solution for secondary battery.

3. The electrolyte solution for secondary battery according to claim 1 or 2,
 further comprising a cyclic monosulfonate represented by the following general²
 formula (2):

[formula 2]



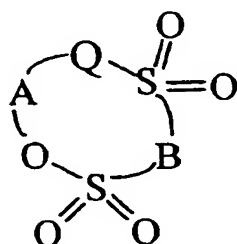
(2)

5

wherein n is an integer of 0 to 2; R₅ to R₁₀ independently represent an
 atom or a group selected from a hydrogen atom, a substituted or unsubstituted
 alkyl group having 1 to 12 carbon atoms, a substituted or unsubstituted
 fluoroalkyl group having 1 to 6 carbon atoms, and a polyfluoroalkyl group having
 10 1 to 6 carbon atoms.

4. The electrolyte solution for secondary battery according to any one of claims 1 to 3, further comprising a cyclic sulfonate having two sulfonyl groups represented by the following general formula (3):

[formula 3]



(3)

5

wherein Q represents an oxygen atom, an methylene group or a single bond, A represents a group selected from a substituted or unsubstituted alkylene group having 1 to 5 carbon atoms, a carbonyl group, a sulfinyl group, a polyfluoroalkylene group having 1 to 5 carbon atoms, a substituted or unsubstituted fluoroalkylene group having 1 to 5 carbon atoms, a substituted or unsubstituted alkylene group having 1 to 5 carbon atoms in which at least one of C-C bonds is converted into a C-O-C bond, a polyfluoroalkylene group having 1 to 5 carbon atoms in which at least one of C-C bonds is converted into a C-O-C bond, and a substituted or unsubstituted fluoroalkylene group having 1 to 5 carbon atoms in which at least one of C-C bonds is converted into a C-O-C bond; and B represents a group selected from a substituted or unsubstituted alkylene group having 1 to 5 carbon atoms, a polyfluoroalkylene group having 1 to 5 carbon atoms, and a substituted or unsubstituted fluoroalkylene group having 1 to 5 carbon atoms.

10

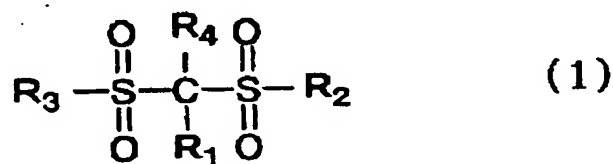
15

5. The electrolyte solution for secondary battery according to any one of claims 1 to 4, further comprising at least one of vinylene carbonate and derivatives thereof.
6. The electrolyte solution for secondary battery according to any one of claims 1 to 5, wherein the electrolyte comprises a lithium salt.
7. The electrolyte solution for secondary battery according to claim 6, wherein the lithium salt is at least one lithium salt selected from the group consisting of LiPF_6 , LiBF_4 , LiAsF_6 , LiSbF_6 , LiClO_4 , LiAlCl_4 , and $\text{LiN}(\text{C}_k\text{F}_{2k+1}\text{SO}_2)(\text{C}_m\text{F}_{2m+1}\text{SO}_2)$, wherein k and m are independently 1 or 2.
8. The electrolyte solution for secondary battery according to any one of claims 1 to 7, wherein the aprotic solvent is at least one organic solvent selected from the group consisting of cyclic carbonates, linear carbonates, aliphatic-carboxylates, γ -lactones, cyclic ethers, linear ethers and fluoride derivatives thereof.
- 5 9. A secondary battery having a cathode, an anode and an electrolyte solution for secondary battery characterized in that the electrolyte solution for secondary battery is an electrolyte solution for secondary battery according to any one of claims 1 to 8.
10. The secondary battery according to claim 9, wherein the anode comprises lithium metal or carbon as an anode active material.

11. The secondary battery according to claim 10, wherein the anode comprises graphite or amorphous carbon as the carbon.

12. The secondary battery according to any one of claims 9 to 11, wherein the secondary battery is covered with a laminate jacket.

13. An additive for an electrolyte solution for an electrochemical device comprising a compound represented by the following general formula (1):
[formula 4]



5 wherein R₁ and R₄ independently represent an atom or a group selected from a hydrogen atom, a substituted or unsubstituted alkyl group having 1 to 5 carbon atoms, a substituted or unsubstituted alkoxy group having 1 to 5 carbon atoms, a substituted or unsubstituted fluoroalkyl group having 1 to 5 carbon atoms, a polyfluoroalkyl group having 1 to 5 carbon atoms, -SO₂X₁, wherein X₁
10 is a substituted or unsubstituted alkyl group having 1 to 5 carbon atoms, -SY₁, wherein Y₁ is a substituted or unsubstituted alkyl group having 1 to 5 carbon atoms, -COZ, wherein Z is a hydrogen atom or a substituted or unsubstituted alkyl group having 1 to 5 carbon atoms, and a halogen atom; and R₂ and R₃
15 independently represent an atom or a group selected from a substituted or unsubstituted alkyl group having 1 to 5 carbon atoms, a substituted or unsubstituted alkoxy group having 1 to 5 carbon atoms, a substituted or unsubstituted phenoxy group, a substituted or unsubstituted fluoroalkyl group

having 1 to 5 carbon atoms, a polyfluoroalkyl group having 1 to 5 carbon atoms, a substituted or unsubstituted fluoroalkoxy group having 1 to 5 carbon atoms, a polyfluoroalkoxy group having 1 to 5 carbon atoms, a hydroxyl group, a halogen atom, $-NX_2X_3$, wherein X_2 and X_3 independently represent a hydrogen atom or a substituted or unsubstituted alkyl group having 1 to 5 carbon atoms, and $-NY_2CONY_3Y_4$, wherein Y_2 to Y_4 independently represent a hydrogen atom or a substituted or unsubstituted alkyl group having 1 to 5 carbon atoms.